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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,040	07/30/2001	Zhaocheng Wang	450117-03382	3569
20999	7590	04/18/2005	EXAMINER	
FROMMER LAWRENCE & HAUG			BLOUNT, STEVEN	
745 FIFTH AVENUE- 10TH FL.				
NEW YORK, NY 10151			ART UNIT	PAPER NUMBER
			2661	

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/919,040	WANG ET AL. <i>[Signature]</i>
	<b>Examiner</b>	<b>Art Unit</b>
	Steven Blount	2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 30 July 2001.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1 - 10 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1 - 10 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. Claims 1 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,519,730 to Jasper et al in view of U.S. Patent Application Publication 2002/0176483 to Crawford and U.S. patent 6,470,030 to Park.

With regard to claim 1, Jasper et al teaches a device for receiving pilot symbols which are ultimately used for phase error correction, wherein the pilot symbols are in the same time slot as the data which is being phase compensated for. See col 5 lines 23+ and 37+, col 9 lines 43+, and col 3 lines 5+: “To provide for channel compensation in the subchannels that do not have a pilot, the time domain pilots that are provided can be utilized to provide an estimation of a pilot for that subchannel.” Note also that phase error correction is discussed in col 9, lines 40 to 50. Jasper does not, however, teach the use of a common phase error correction value to perform channel estimation, nor does Jasper et al teach that the pilot symbols form a continuous stream.

Crawford teaches an OFDM system wherein pilot signals with a frequency subcarrier (+/- 7 delta F and +/- and 21 delta F : see page 4, line 1) are transmitted such that for each data symbol, a pilot tone is associated therewith such that a “complex signal measurement” is made to “produce an estimate of the aggregate phase error of the current OFDM data symbol” (Note that although it is not *explicitly* stated that the pilot symbol and data symbol are in the same timeslot, as taught in Jasper, the association between long symbols and the pilot tone discussed on page 4 par 42, and

the subsequent discussion of associating "all of the pilots of each subsequent data symbol" (emphasis added) allows one to infer that they are in the same time slot).

The estimated "aggregate phase error" discussed above corresponds to the "common phase error correction value" mentioned in line 14 of claim 1, and is used to perform a channel estimation, as shown in figures 3, 4, and 9 (see especially member 410 in figure 9) and discussed in paragraph 104 (page 10).

Crawford does not, however, teach the use of pilot symbols 'transmitted in a continuous stream'.

Transmitting pilot symbols in this manner for use as "the reference carrier" is taught in col 7, lines 7+ of Park et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used a common phase error correction value to perform channel estimation in Jasper et al in view of the teachings of Crawford, and to have used a continuous stream of pilot symbols in Jasper et al/Crawford in light of the teachings of Park et al in order to provide a more accurate method for performing channel estimation for a data symbol.

With regard to claim 2, see the discussion of "scattered pilot cells" in col 1, lines 42+ of Park et al.

With regard to claim 3, see col 10 lines 35+ of Park et al.

With regard to claims 4 - 5, the time slot and distributed (ie, scattered) cell elements discussed above would render this claim obvious.

With regard to claims 6 - 10, see the rejection of claims 1 – 5 above, where each of the corresponding method steps are discussed in relation to the apparatus elements of these claims.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Blount whose telephone number is 571-272-3071. The examiner can normally be reached on M-F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Chau Nguyen, can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB  
4/15/05

*Bel*  
Ali Patel  
Primary Examiner